



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,919	09/05/2003	Ann Banich	MP1734-US2	8859
27788	7590	03/15/2006		
TYCO ELECTRONICS CORPORATION MAIL STOP R20/2B 307 CONSTITUTION DRIVE MENLO PARK, CA 94025			EXAMINER PHAN, THIEM D	
			ART UNIT 3729	PAPER NUMBER

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/655,919	BANICH ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Tim Phan	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 09 January 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-12 is/are pending in the application.  
 4a) Of the above claim(s) 7-12 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-6 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/24/05 &amp; 9/7/05</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicants' election without traverse of Group I, Claims 1-6, filed on 1/09/06, is acknowledged.

The Restriction mailed on 12/12/05 has been carefully reviewed and is held to be proper. Moreover Applicants did not distinctly and specifically point out any error in the Restriction Requirement. Accordingly, Claims 7-12 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group, there being no allowable generic or linking claim.

The Restriction filed on 12/12/05 is hereby **made Final**.

Applicants are required to cancel these nonelected claims (7-12) or take other appropriate action.

An Office Action on the merits of Claims 1-6 now follows.

### ***Title***

2. The following title is suggested: "A Method of Making a Polymeric PTC Device".

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banich et al (US 6,104,587) in view of Zhang et al (US 6,211,771).

**As applied to claim 1,** Banich et al teach a process of making a device exhibiting PTC behavior, comprising:

- (a) preparing a laminate comprising a conductive polymer composite (Fig. 1, 3) sandwiched between metal foil electrodes (Fig. 1, 5 & 7; col. 3, lines 1 & 2; col. 4, lines 61 & 62) to form a panel, said polymer composite having a melting temperature T<sub>sub.m</sub> (Col. 4, lines 25 & 26);
- (b) crosslinking the laminate as one of the many processing steps (Col. 6, lines 32-34);
- (d) irradiating the panel using electron beam irradiation as one of the many processing steps (Col. 6, lines 32-34) of at least 20 Mrads or less than 200 Mrads depending on the required application (Col. 6, lines 21-23); and
- (e) providing individual devices by subdividing or punching (Col. 7, lines 56-58) the irradiated panel.

Zhang et al teach a process of preparing individual electrical devices by snapping a panel of plates (Fig. 1, 30 or 50) sandwiching PCT conductive polymer element (Fig. 2, 7) along the fracture channel (Fig. 1, 302), in order to lower production costs by obtaining quickly and accurately a large number of individual PTC elements.

It would be obvious to one of ordinary skill in the art at the time the invention was made to combine the two teachings by applying the snapping process of metal/PTC panel, as taught by Zhang et al, to the process of making a device exhibiting PTC behavior, as taught by Banich et al, specially the expensive and slow punching step, in order to lower production costs by obtaining quickly and accurately a large number of individual PTC elements.

**As applied to claim 2,** Banich et al teach that the crosslinking of the laminate is accomplished using irradiation (Col. 6, lines 19 & 20).

**As applied to claim 3,** Banich et al teach that the panel is irradiated using electron beam irradiation of at least 50 Mrad or less than 200 Mrads depending on the required application (Col. 6, lines 21-23).

**As applied to claims 4 and 5,** Banich et al teach that the panel is subjected to a heat treatment comprising a temperature exceeding the melting temperature of the conductive polymer composite prior to the irradiation of the panel (Col. 6, lines 15-19; col. 6, lines 29-30).

**As applied to claim 6,** Banich et al teach that the irradiation of the panel is accomplished

using more than one irradiation step or many crosslinking steps (Col. 6, lines 12-14) to achieve the electron beam irradiation of at least 20 Mrads or less than 200 Mrads depending on the required application (Col. 6, lines 21-23), and the panel is subjected to a heat treatment comprising a temperature exceeding the melting temperature of the composite before each irradiation step (Col. 6, lines 15-19; col. 6, lines 29-30).

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 571-272-4568. The examiner can normally be reached on M - F, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 3729

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tim Phan  
Examiner  
Art Unit 3729

tp  
March 14, 2006



A. DEXTER TUGBANG  
PRIMARY EXAMINER